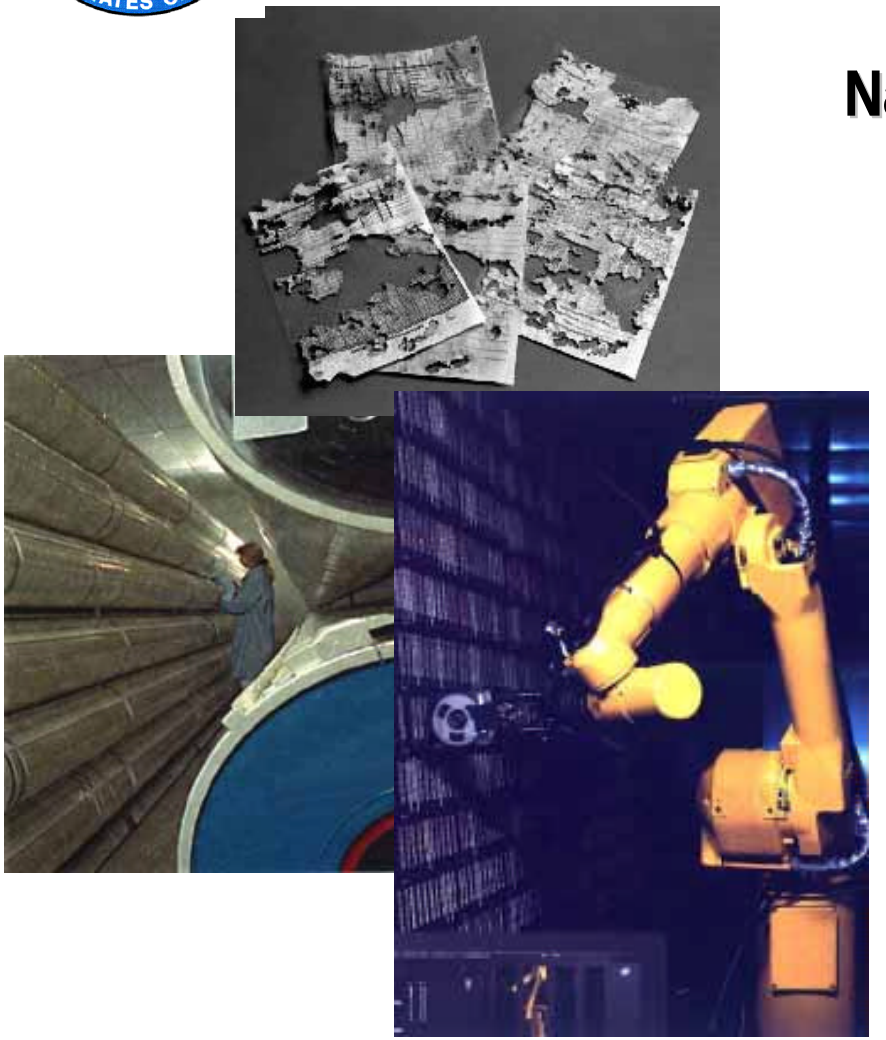


NOAA's National Environmental Satellite, Data, and Information Service

Constituent Briefing

May 5, 2000

Gregory W. Withee
Assistant Administrator for Satellite and Information Services

The NOAA/NESDIS Mission is

- **To provide and ensure timely access to global environmental data from satellites and other sources to promote, protect, and enhance the Nation's economy, security, environment, and quality of life.**

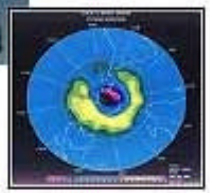
- **To fulfill its responsibilities NESDIS acquires and manages the Nation's operational environmental satellites, provides data and information services, and conducts related research.**

NESDIS PROGRAMS

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITES

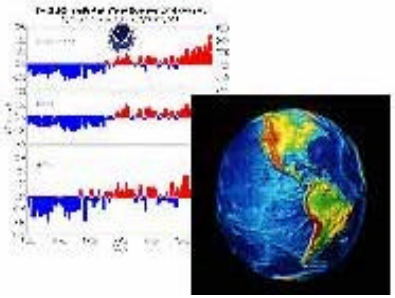
POLAR ORBITING ENVIRONMENTAL SATELLITES

SATELLITE OPERATIONS CONTROL



SATELLITE DATA PROCESSING AND DISTRIBUTION

RESEARCH AND APPLICATIONS



ENVIRONMENTAL INFORMATION SERVICES AND DATA MANAGEMENT

UNIQUE ROLE OF NOAA'S NATIONAL DATA CENTERS

- Acquire data from U.S. and foreign sources
- Preserve the Nation's environmental data assets
- Assemble data into easy to use long term data sets
- Provide access to environmental data for business, federal and science users
- Describe the environment

Scientific Value

From NASA/NOAA Global Change Science Requirements for Long Term Archive Workshop (October 1998):

"Basic scientific purpose of a Long Term Archive (LTA) is to enable and facilitate the best possible science and highest quality assessments as this work will be used for making policy and business decisions."

"…LTA is to document Earth system variability and change on global, regional, and local scales, building and maintaining a high quality base of data and information, and establishing the best possible historical perspective critical to effective analysis and predication."

NOAA'S DATA SYSTEM CAPABILITY

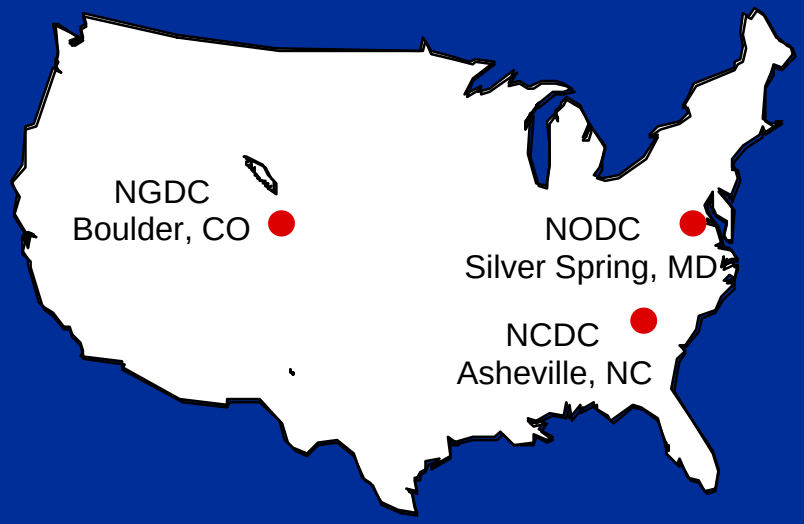
Manages 3 National Data Centers and 7 World Data Centers

Archives over 450 terabytes of data and responds to over 4,000,000 requests per year from over 70 countries

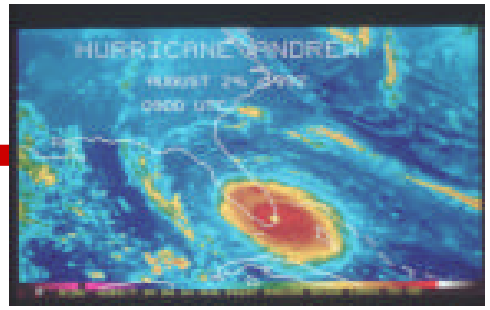
Maintains some 1300 data bases containing over 2400 environmental variables

Maintains over

- **535,000 tapes**
- **375,000,000 film records**
- **140,000,000 paper records**



NATIONAL CLIMATIC DATA CENTER



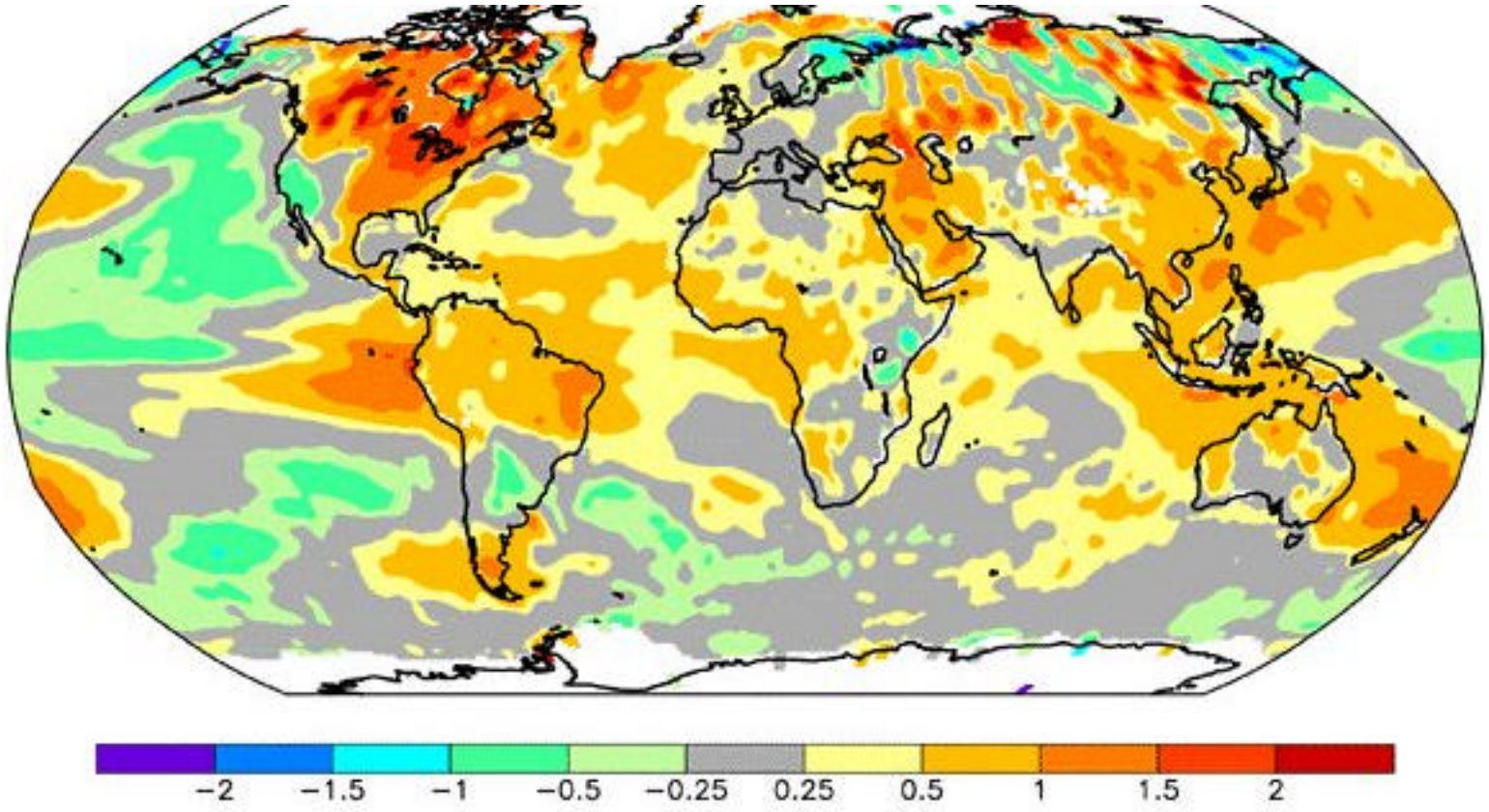
NCDC Data Include

- Surface Weather Observations
- Upper Atmosphere Weather Observations
- Weather Radar Data
- Cooperative Observer Data; Daily Temperature And Precipitation
- Worldwide Observations From Aircraft, Ships, Land And Satellite

NCDC Data Include

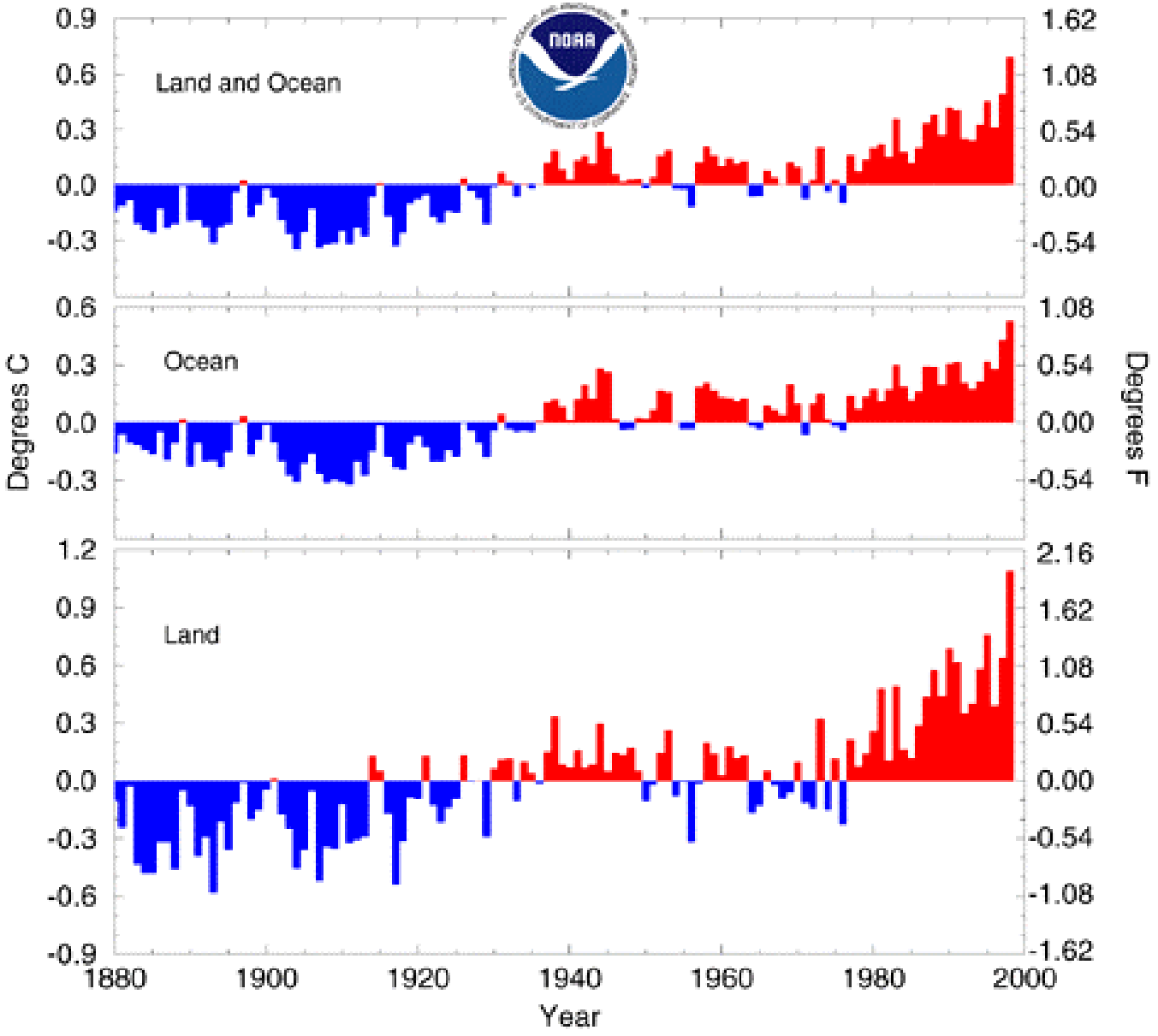
- Business Research Using Long Term Weather Trends
- Attorneys And Insurance Companies For Litigation And Risk Analysis
- Architects And Engineers For Energy Conversation And Construction
- Climate Change Research

1998 GLOBAL SURFACE TEMPERATURE ANOMOLIES IN CELSIUS VALUES ARE A BLEND OF IN SITU AND SATELLITE OBSERVATIONS CLIMATOLOGICAL BASE PERIOD IS 1992 - 1998

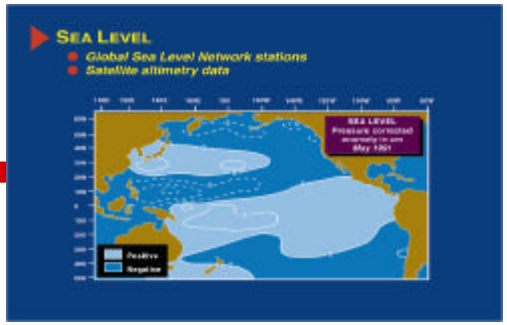


JAN-OCT Global Surface Mean Temperature Anomalies

National Climatic Data Center/NESDIS/NOAA

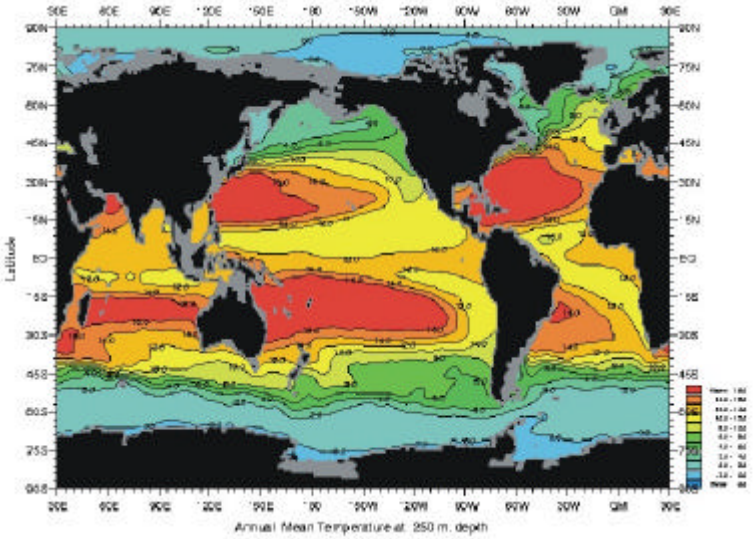


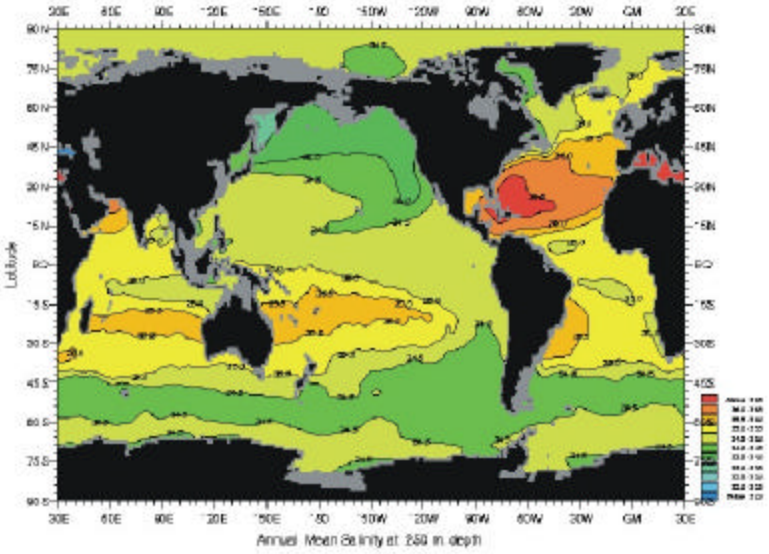
NATIONAL OCEANOGRAPHIC DATA CENTER

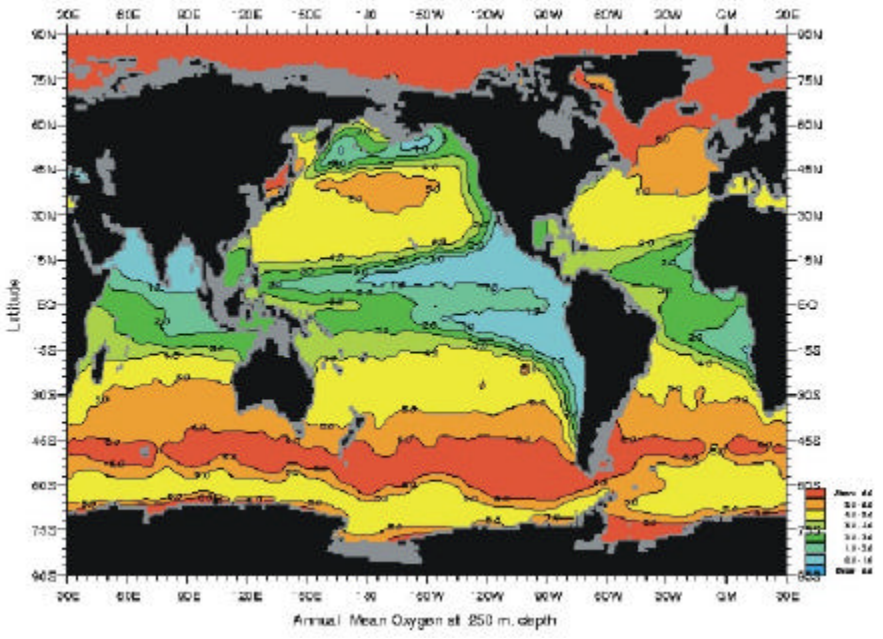


- NODC DATA INCLUDE
  - OCEAN WINDS AND WAVES
  - OCEAN CURRENTS
  - SUBSURFACE TEMPERATURE PROFILES
  - MARINE BIOLOGY AND CHEMISTRY
  - MARINE POLLUTION
- NODC USERS
  - PLATFORM AND VESSEL DESIGNERS
  - MARINE TRANSPORTATION CONSULTANTS FOR SHIP ROUTE PLANNING
  - NAVAL CONTRACTORS FOR DOD APPLICATIONS
  - OCEAN RESEARCH COMMUNITY

World Ocean Atlas 1998

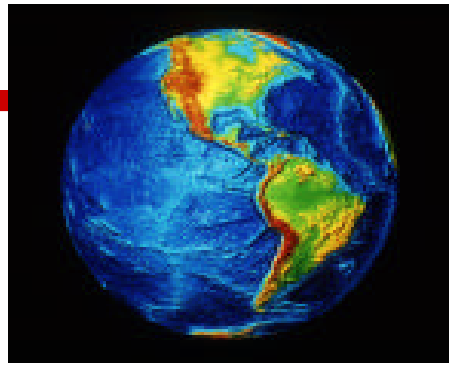






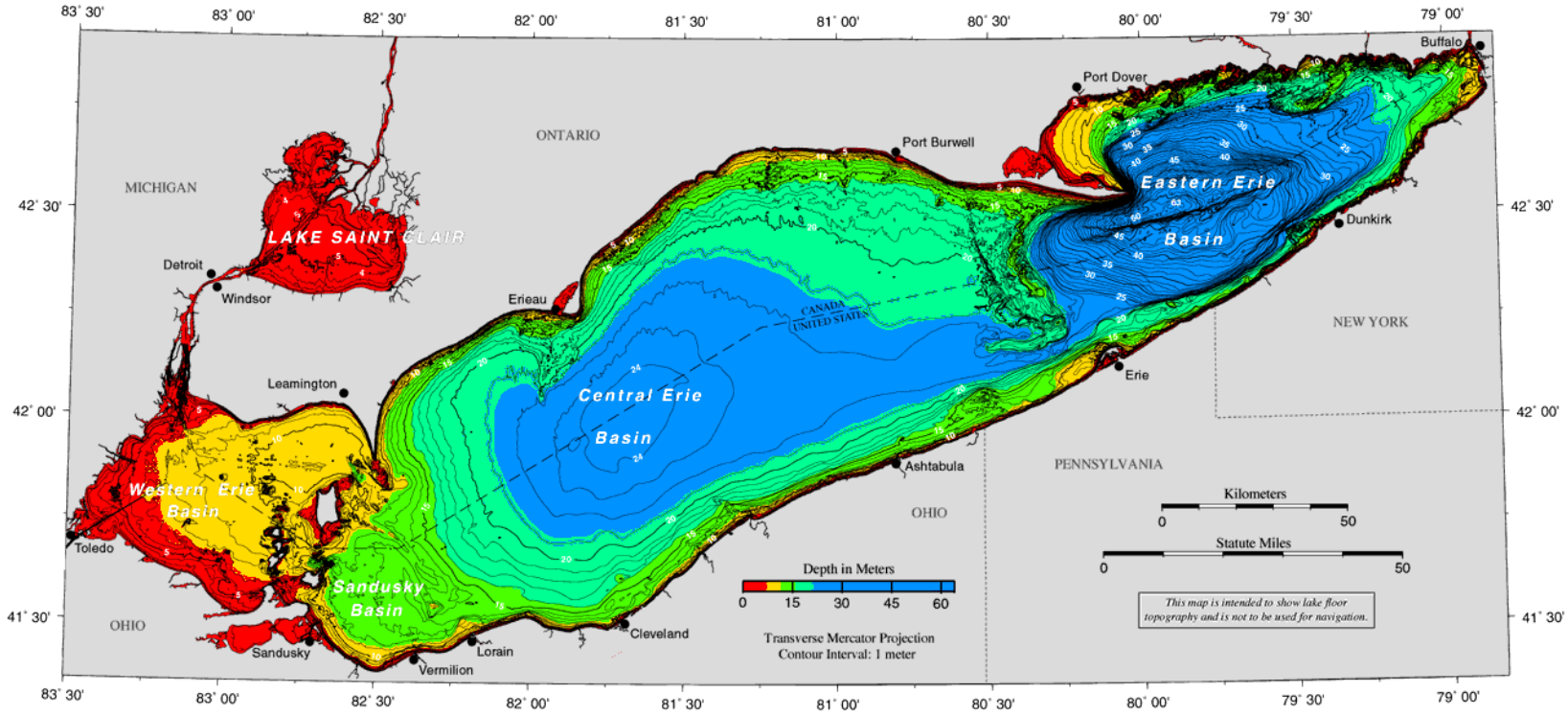
Annual Means - *in situ* temperature, salinity, and oxygen data

NATIONAL GEOPHYSICAL DATA CENTER



- NGDC DATA INCLUDE
  - GRAVITY AND MAGNETIC FIELDS
  - BATHYMETRY AND TOPOGRAPHY
  - MARINE GEOLOGY AND GEOPHYSICS
  - EARTHQUAKES, TSUNAMIS, VOLCANOES
  - SOLAR-TERRESTRIAL INTERACTIONS
  - ICE AND SNOW COVER
  - PALEOCLIMATOLOGY
- NGDC USERS INCLUDE
  - DESIGNERS OF NUCLEAR POWER PLANTS
  - ENERGY COMPANIES FOR OIL AND GAS EXPLORATION
  - OFFSHORE MINING FIRMS FOR OPERATIONAL HAZARD REDUCTION
  - INSURANCE COMPANIES DETERMINING RISK FACTORS FOR SEISMICALLY ACTIVE AREAS
  - RESEARCH SCIENTISTS

Bathymetry of Lake Erie and Lake Saint Clair



"Mini-Poster" *BATHYMETRY OF LAKE ERIE AND LAKE SAINT CLAIR*

1998

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
NATIONAL GEOPHYSICAL DATA CENTER
OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH
GREAT LAKES ENVIRONMENTAL RESEARCH LABORATORY

Published by the National Geophysical Data Center
World Data Center A for Marine Geology and Geophysics Report MGG-14
Code E/GC3, 325 Broadway, Boulder, CO 80303-3328
info@ngdc.noaa.gov
http://www.ngdc.noaa.gov/mgg/greatlakes/greatlakes.html

DEPARTMENT OF FISHERIES AND OCEANS
CANADIAN HYDROGRAPHIC SERVICE

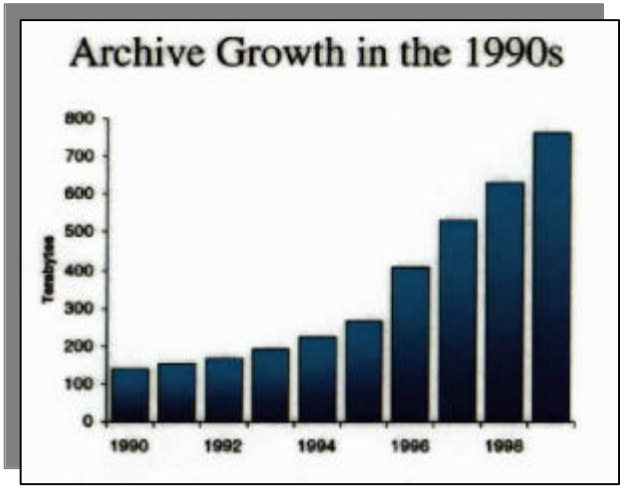
Issues And Challenges

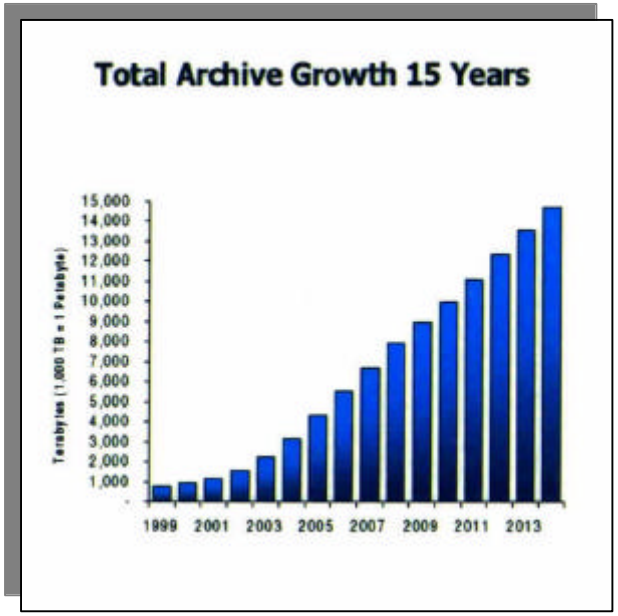
- Sustaining base budget to meet inflationary costs
- Increasing demands for credible climate information
- Increasing volumes of data
- Keeping pace with technology in archiving
- Growing customer demands for data and products

More Data to Manage

Volume growth of new data is outstripping the ability to ingest and process the data sets

- NOAA's cumulative digital archive grew 130 terabytes from 1978-1990
- Grew another 130 terabytes from 1990-1995
- Grew another 130 terabytes in 1996 alone
- Currently approximately 800 terabytes





By 2003, NOAA will ingest and process more new data in one year than was contained in the total digital archive in 1998.

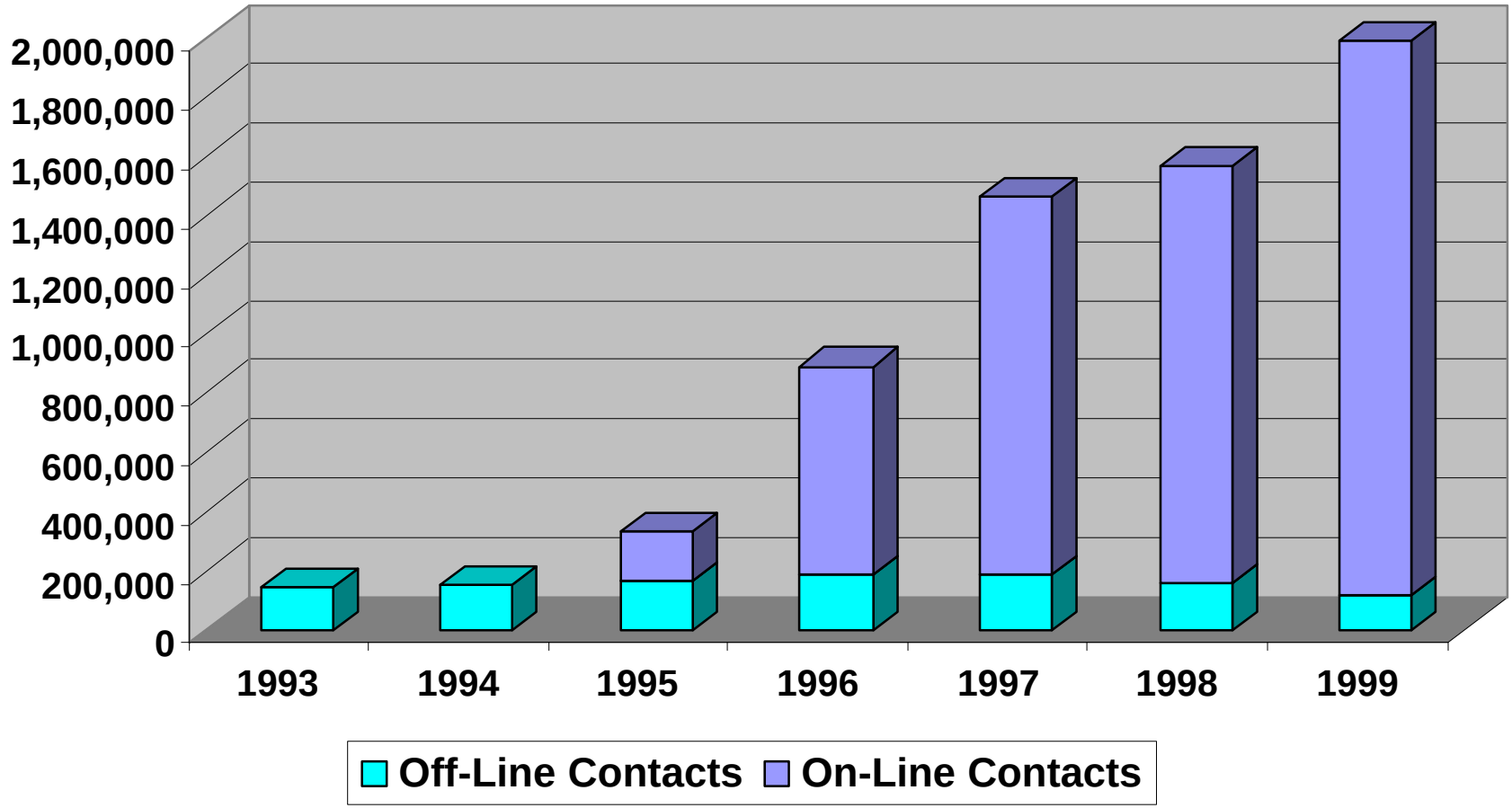
Growing Rates of Environmental Data

(i.e., POES, MetOP, DMSP, GOES, and EOS)

Data Holdings at NOAA's National Data Centers (2/00)

- Data on-line **2 Terabytes**
- Data near-line **12 Terabytes**
- Data NOT on-line **725 Terabytes**

NCDC Requests by Fiscal Year (Combined Offline and Online)



Status of NOAA Environmental Data Management									
Data Sets and Observations		End-to-End Environmental Data Management Functions							
		Planning	Collect or Rescue	Ingest	Metadata and Cataloging	Calibrate and Validate	Store	Access	Migrate
Historical	In-Situ Observations of the Environment	✓	✓	✓	✓	✓	✓	☮	☮
	COOP/USHCN	✓	✓	✓	✓	✓	✓	☮	☮
	GHCN	✓	✓	✓	✓	☮	☮	☮	☮
	CARDS/COADS	✓	✓	✓	✓	☮	☮	☮	☮
Modernization	DMSP	✓	✓	✓	✓	☮	☮	☮	×
	POLAR	✓	✓	✓	☮	☮	☮	×	×
	ASOS	✓	☮	☮	☮	☮	☮	×	×
	NEXRAD	✓	☮	☮	☮	×	×	×	×
	GOES	✓	☮	☮	☮	×	×	×	×
	GPS	✓	☮	☮	☮	☮	☮	☮	☮
Future	New In-Situ Land and Ocean Observing Systems	✓	×	×	×	×	×	×	×
	EOS	☮	×	×	×	×	×	×	×
	NPP	☮	×	×	×	×	×	×	×
	NPOESS	☮	×	×	×	×	×	×	×

Current Capabilities

Status of NOAA Environmental Data Management									
Data Sets and Observations		End-to-End Environmental Data Management Functions							
		Planning	Collect or Rescue	Ingest	Metadata and Cataloging	Calibrate and Validate	Store	Access	Migrate
Historical	In-Situ Observations of the Environment	✓	✓	✓	✓	✓	✓	✓	☮
	COOP/USHCN	✓	✓	✓	✓	✓	✓	☮	☮
	GHCN	✓	✓	✓	✓	☮	☮	☮	☮
	CARDS/COADS	✓	✓	✓	✓	☮	☮	☮	☮
Modern-zation	DMSP	✓	✓	✓	✓	✓	✓	✓	☮
	POLAR	✓	✓	✓	☮	☮	☮	×	×
	ASOS	✓	☮	☮	☮	☮	✓	×	×
	NEXRAD	✓	✓	✓	✓	×	☮	☮	×
	GOES	✓	☮	✓	✓	×	×	×	×
	GPS	✓	☮	☮	☮	☮	☮	☮	☮
Future	New In-Situ Land and Ocean Observing Systems	✓	×	×	×	×	×	×	×
	EOS	✓	×	×	×	×	×	×	×
	NPP	✓	×	×	×	×	×	×	×
	NPOESS	✓	×	×	×	×	×	×	×

Outlook with Full FY 2001 Funding

✓ = Can Do With Current Resources

☮ = Need Incremental Resources

× = Requires Substantial Additional Resources

FY 2001 President's Budget

Environmental Data Management Systems

	FY 2000 Enacted[2]	Inc/DEC[2]	FY 2001 Pres. Budget[2]
Data and Information Services	**37, 533**	**(5,079)**	**32, 454**
Environmental Data Systems Modernization	**12, 288**	**47**	**12, 335**
Regional Climate Centers	**2, 542**	**(2,542)**	**$0**
NOAA's Climate Observation Service Iniatives[1]	**0**	**15,000**	**15,000**
	52,363	**7,426**	**59,789**

[1] **NESDIS Portion**

[2] **Dollar Amount in Thousands**

Data and Information Services ($32,454k)

- ***Operations:*** Funding to support the operation and management of three environmental data centers ($32.4 – 5.2 - .5)
- ***Cooperative observer network modernization:*** continue the development and modernization of the cooperative network. ($500K)
- ***Climate Database Modernization and Utilization Program:*** Make major climate databases available via the world wide web thus increasing the utilization of this national resource. ($5,200M)

NOAA Coastal Data Development Center ($0M)

- ***Mission/function*** – Provide the stewardship of the long-term coastal data record. Includes data catalog/data mining, data access, data q/c integration. archiving, and new product development
- Congressional directed in FY2000
- Establishing in Bay St. Louis, Mississippi

Environmental Data Systems Modernization ($12,335K)

- ***NVDS*** – Develop an efficient NOAA customer-oriented virtual data system that provided access to environmental data and information, for NOAA's three data centers ($3.5M)

- ***ESDIM*** – Supports a variety of data management and technology innovations throughout NOAA in FY 1999. Grants Awarded – 54 ($7.3M)

- ***SATELLITE ACTIVE ARCHIVE*** – Provides on-line access to a portion of NOAA's remotely-sensed environmental data. ($1.5M)

FY 2001 Climate Observation and Services Budget Request[1]

Climate Observations and Services

• Climate Reference Network	$6.0M
• Climate Data and Information Access	4.0M
• Improve Observational Network Performance	2.5M
• Operationalize Infrastructure and Delivery	1.0M
• Build on Current NASA and French Altimetry Programs	1.5M
Total	$15.0M

[1] **NESDIS Portion of the climate issue in the OAR budget.**

NOAA's Climate Observations and Services Initiative

- ***Goal*** – To develop the observation, data and information systems necessary to forecast and assess climate variations over the continuum from weeks to centuries

- Climate observation initiative request $28M

- NESDIS $15M

NESDIS Climate Observations and Services ($15M) (continued)

- ***Climate Reference Network*** ($6M) – Establish several hundred locations across the United States to monitor continental-scale long term climate change and variability.
  - This Reference Network will build upon the historical data from the stations in NOAA's existing network of observing sites.
  - It will also be the first observational network that will adhere to all the guidelines and principles for long-term climate monitoring specified by the National Research Council.

NESDIS Climate Observations and Services ($15M) (continued)

- ***Climate Data and Information Access*** ($4M)
  - This component will utilize new storage technologies to improve and maintain public and research access to the large volume of ground- and space-based data sets and implement a program to ensure the integrity and continuity of the old and new observations of data over time.
  - A significant investment is needed to provide the systems needed for public access to the large data sets generated by NOAA's satellite programs
    - To analyze the climatology of extreme weather events
    - To monitor and access climate variations and to make there readily available to the public and decision markers

NESDIS Climate Observations and Services ($15M) (continued)

- Improve observational network performance ($2.5M)
  - Develop and implement indicators of observation systems network health
- Operationalize Infrastructure and Delivery ($1M)
  - More experimental climate data bases into operation

NESDIS Climate Observations and Services ($15M) (continued)

- ***Altimetry*** ($1.5M)
  - Build on the current U.S. (NASA) and French satellite altimetry programs (Topex and Jason) to ensure their continuity through the next decade.
  - Altimetry Data is a key data set to climate models.

Summary

- Reliable, timely access to environmental data is key to critical analysis and predictions for making necessary policy and business decision.
- New technologies provide means to address growing data volumes and increasing numbers of users
- Strong Industry – Government – Academic Partnership is key to success